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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/578,731	05/10/2006	Constantinos D. Diakoumakos	830018	4463
7590 01/07/2009				
Huntsman Corporation Legal Department 10003 Woodloch Forest Drive The Woodlands, TX 77380			EXAMINER FINK, BRIEANN R	
			ART UNIT 4131	PAPER NUMBER
			MAIL DATE 01/07/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/578,731

Applicant(s)

DIAKOUMAKOS ET AL.

Examiner

BRIANN R. FINK

Art Unit

4131

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/21/2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 23-26, 30 and 32-43 is/are pending in the application.
- 4a) Of the above claim(s) 32-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 23-26 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 23-26, 30, 32-43 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/808)
Paper No(s)/Mail Date 5/10/2006
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claims 1-22, 27-29 and 31 have been canceled.
2. Applicant's election with traverse of the complex of an organoboron compound and an organosilicon compound in the reply filed on November 21, 2008 is acknowledged. The traversal is on the ground(s) that, with respect to the amended claims filed on November 21, 2008, that the cited art does not teach the entire special technical feature of a complex of an organoborane compound with a silsesquioxane containing an amino group. This is not found persuasive because with respect to the amended claims filed on November 21, 2008, a new ground for restriction can be applied. The previous ground for restriction was based on the lack of a special technical feature. Now, the amended claims lack a common technical feature.

The requirement is still maintained, but *not* made final.

3. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 23-26, and 30, drawn to a complex of an organoboron compound and a silsesquioxane containing an amino group.

Group II, claim(s) 32-43, drawn to a method using a complex of an organoboron compound and an organosilicon compound containing an amino group.

4. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or

corresponding special technical features for the following reasons: The claims, as amended, now lack a common technical feature: the silsesquioxane. Group I is drawn to a complex of an organoboron compound and a silsesquioxane containing an amino group, where as Group II is drawn to a complex of an organoboron compound and an organsilicon compound containing an amino group.

Applicant is advised that the reply to this requirement to be complete must include (i) an election of a species or invention to be examined even though the requirement may be traversed (37 CFR 1.143) and (ii) identification of the claims encompassing the elected invention.

5. For examination purposes, the group elected from the reply to the initial restriction, claims 23-26 and 30, is examined in the following office action.

Specification

6. The use of many trademarks has been noted in this application, such as the methacrylates available through the Sartomer Company (p. 29, ll. 5-7). They should be capitalized wherever they appear and be accompanied by the generic terminology.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 23-26 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Sonnenschein et al.* (US 6,777,512) in view of *Lichtenhan et al.* (US 2003/0055193).

Sonnenschein et al. teaches an organoborane amine complex that dissociates to initiate polymerization (col. 3, ll. 42-43). The organoborane is a trialkyl borane or an alkyl cycloalkyl borane (col. 3, ll. 65-66). *Sonnenschein et al.* teaches that the amines used to complex the organoborane can be any amine (or mixture of amines) which complex the organoborane and can be further decomplexed (col. 4, ll. 11-14). A preferred amine is one comprising a compound having a primary amine and hydrogen bond accepting groups, which are separated by at least two to three carbon atoms (col. 5, ll. 8-14). The amines can be amino siloxanes (col. 9, ll. 10-11). The amine can also be an amine terminated polysiloxane (col. 10, ll. 18-19). The amines are preferably primary or secondary amines (col. 4, ll. 44-45).

Sonnenschein et al. does not teach the polysiloxane as being specifically a silsesquioxane.

Lichtenhan et al., however, teaches processes for functionalizing polyhedral oligomeric silsesquioxanes (p. 1, [0002]). The silsesquioxanes can be functionalized with amines, aliphatic and aromatic (p. 8, [0055]). Process III, shown in Scheme 4 (p. 8) is taught to produce functionalized polyhedral oligomeric silsesquioxanes that are useful as crosslinkers in polymerizations (p. 7, [0049]). *Lichtenhan et al.* further teaches that incorporation of polyhedral

oligomeric silsesquioxanes into polymer materials results in a material with improved thermal, mechanical, and physical properties (p. 1 [0003]).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the organoborane amine complex of *Sonnenschein et al.* by using a silsesquioxane in the amine terminated polysiloxane as suggested by *Lichtenhan et al.* because it would give polymer compositions which are more stable at higher temperatures, as well as improved mechanical strength.

As to claim 24, *Sonnenschein et al.* teaches that the alkyl groups of the organoborane have one to ten carbon atoms.

As to claim 25, *Sonnenschein et al.* teaches the preferred organoboranes of the following: tri-ethyl borane, tri-isopropyl borane, and tri-n-butyl borane.

The functionalized silsesquioxane structure shown in Scheme 4 falls within that required by claim 26. The functionalized silsesquioxane produced by Process I, shown in Scheme I also falls within that of claim 26.

As to claim 30, the above described silsesquioxanes are amino functionalized polyhedral oligomeric silsesquioxanes (POSS).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRIEANN R. FINK whose telephone number is (571)270-7344. The examiner can normally be reached on Monday through Friday, 7:00 AM to 4:30 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on (571)272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David R. Sample/
Supervisory Patent Examiner
Art Unit 4131

/B. R. F./
Examiner, Art Unit 4131